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A distance D6 between attachment point AP3 and hinge point HP4 extends along rigid base support BS1 whereby $D6 \geq 0$. And, a distance D7 between attachment point AP4 and hinge point HP5 extends along rigid base support BS2 with distance D7 preferably equaling distance D6.

A summation of distances D5-D7 must equal length L1 of display segment DS2 to ensure display segment DS2 is uniformly stowed over its entire length L1 within arch segment AS3 when display segment DS2 has the curved shape shown in FIG. 7 based on arch segment AS3 being in a closed state, and to ensure that display segment DS2 is flat and straight over its entire length L1 relative to arch segment AS3 when display element DS2 has the planar shape shown in FIG. 8 based on arch segment AS3 being in an open state. Those having ordinary skill in the art will appreciate a radius of arch segment AS3 is based on the wrapped radius R1 (FIG. 3) of display segment DS2 and is determinative of distance D2 and distance D3.

A third inventive principle of the present invention is to structurally configure a stick (e.g., any type of hollow body suitable for wrapping an object around) to support an optimal structural configuration of its internal components (e.g., driving electronics, connectors, etc.) and its external components (e.g., buttons and interface slots) without requiring any movement of these components upon a wrapping of a flexible display foil (e.g., FIG. 1) on the stick or an unwrapping of the flexible display foil from around the stick. The present invention does not impose any limitations or restrictions to the structural configuration and material composition of the components of a stick of the present invention. Thus, in practice, the specific implementations of a stick of the present invention is dependent upon the commercial implementations of the present invention, and are therefore without limit. The following descriptions of FIGS. 9 and 10 provides exemplary embodiments of sticks incorporating the aforementioned third inventive principle of the present invention.

In one embodiment, as illustrated in FIG. 9, a stick 40 employs a cylindrical housing 41 defining a cavity 42 therein that facilitates a fixed incorporation of internal components in a standard configuration (e.g., a printed circuit board). A cross-section of cylindrical housing 41 can be circular, elliptical, rectangular with rounded corners, square with rounded corners or any other curvilinear cross-section, and an outside radius of cylindrical housing 41 at any point should not be less than a minimum roll-up radius of a flexible display employed within the present invention. Additionally, housing 41 can include two or more segments that are partially or entirely separable to facilitate a repair or replacement of any of its internal components.

In a second embodiment, as illustrated in FIG. 10, a stick 43 further employs a platform 44 encircling housing 41 with platform 44 having a structural configuration for shielding a flexible display when a flexible display foil is wrapped around stick 43, such as, for example when flexible display foil 20 (FIG. 1) is wrapped around stick 43. Concurrently or alternatively, platform 44 may support additional displays and/or display control mechanisms, such as for example, a secondary display integrated with a rear face of flexible display foil.

FIGS. 9-12 illustrate a wrap display system 50 of the present invention incorporating all three inventive principles of the present invention. As shown, wrap display system 50 employs a flexible display foil 60 coupled to a stick 70. Portions of flexible display foil 60 adjacent rigid base supports 81 and 82 of a hinged frame 80 are securely connected to rigid base supports 81 and 82. A hinge support 83 of hinged frame 80 has one arch segment unattached to flexible display foil 60 and hinged to stick 70 via a pair of brackets (of which

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only a bracket 85 is shown). Hinge support 83 further has another arch segment unattached to flexible display foil 60 and hinged to rigid base support 81. A hinge support 85 of hinged frame 80 has one arch segment unattached to flexible display foil 60 and hinged to rigid base support 81. Hinge support 83 further has another arch segment unattached to flexible display foil 60 and hinged to rigid base support 82. It is noted that alternatively hinge supports 83 and 85 may comprise more than two e.g. three arch segments.

FIGS. 9 and 11 illustrate hinged frame 80 in a curvilinear configuration whereby flexible display foil 60 is wrapped around stick 70 in a storage position defined by supports 81-84 of hinged frame 80. Conversely, FIGS. 10 and 12 illustrate hinged frame 80 in a planar configuration whereby flexible display foil 60 is unwrapped from around stick 70 in an operational position defined by supports 81-84 of hinged frame 80.

FIGS. 15-17 illustrate a wrap display system 100 of the present invention incorporating three inventive principles of the present invention. As shown, wrap display system 100 employs a flexible display foil 110 coupled to a stick 120. Portions of flexible display foil 110 adjacent rigid base supports 131 and 132 of a hinged frame 130 are securely connected to rigid base supports 131 and 132. A hinge support 133 of hinged frame 130 has a single arch segment unattached to flexible display foil 110, hinged to stick 120 via a pair of brackets (of which only a bracket 135 is shown) and hinged to rigid base support 131. A hinge support 133 of hinged frame 130 has a single arch segment unattached to flexible display foil 110 and hinged to bases support 131 and 132.

FIG. 16 illustrates hinged frame 130 in a curvilinear configuration whereby flexible display foil 110 is wrapped around stick 120 in a storage position defined by supports 131-134 of hinged frame 130. Conversely, FIGS. 15 and 17 illustrate hinged frame 130 in a planar configuration whereby flexible display foil 110 is unwrapped from around stick 120 in an operational position defined by supports 131-134 of hinged frame 130.

Those having ordinary skill in the art will appreciate that the hinged frame of the present invention can include hinge supports and rigid base supports that may or may not extend entirely under a flexible display foil.

Those having ordinary skill in the art will appreciate numerous advantages and benefits of the present invention including, but not limited to, a flexible display being attached to rigid based supports in the areas where the flexible display does not need with hinge supports for moving the rigid base supports and hinges positions chosen along the rigid base supports such that any length difference due to the different wrapped radius of the flexible display and hinge supports is compensated for.

A flexible display foil of the present invention can be locked when wrapped around a stick of the present invention in an conventional manner, such as, for example, by a snap assembly or a Velcro® assembly integrated on a display cover of the present invention.

From the preceding description of the present invention, those having ordinary skill in the art will appreciate various advantages of the present invention. In particular, a construction of a hinged frame for providing adequate readability and proper storage for a flexible display.

While the embodiments of the invention disclosed herein are presently considered to be preferred, various changes and modifications can be made without departing from the spirit and scope of the invention. The scope of the invention is